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NOTES AND NEWS.

EDITED BY D. A. ROTHROCK, Indiana University, Bloomington, Indiana.

Dr. H. A. SAYRE, professor of mathematics at the University of Alabama, died on Dec. 2, 1916.

Dr. HENRY GUNDER, formerly professor of mathematics at Findlay College, died on Nov. 25 at the age of seventy-nine years.

The National Education Association, under the presidency of Dr. R. J. ALEY, president of the University of Maine, will meet this year at Portland, Oregon, July 7-14. The Department of Superintendence met in Kansas City on February 26 to March 3, 1917.

"On the rational, integral invariants of nilpotent algebras" is the title of a paper by Dr. OLIVE C. HAZLETT, in the December, 1916, number of the *Annals of Mathematics*.

The November number of *Genetics* contains an application of mathematics to some problems of animal husbandry under the title "Some breeding properties of the generalized Mendelian population," by E. N. WENTWORTH and B. L. REMICK, of the Kansas State Agricultural College.

The annual meeting of the Pittsburgh Section of Mathematics Teachers of the Middle States and Maryland Association was held at the University of Pittsburgh, Saturday, January 27, under the presidency of Professor C. S. ATCHISON, of Washington and Jefferson College. Papers were presented on the following subjects: "Prominent deceased mathematicians," by J. A. SILVER; "Recreations in geometry," by J. W. MORRISON; and abstracts from KEYSER'S "The Human Worth of Rigorous Thinking," by W. F. LONG.

Volume 2, No. 11, *Proceedings of the National Academy of Science*, contains mathematical contributions by Professor E. V. HUNTINGTON on "A set of independent postulates of cyclic order," and by Professor HENRY BLUMBERG on "Certain general properties of functions."

The call has been issued for the second annual meeting of the Ohio Section for the first week in April. The Executive Committee consists of Professor T. M. Focke, Case School of Applied Science, chairman, Professor C. C. Morris, Ohio State University, and Professor G. N. Armstrong, Ohio Wesleyan University, secretary.

"Calculation of the first thirty-two Eulerian numbers from central differences of zero" is the title of a paper in *The Quarterly Journal of Pure and Applied Mathematics*, Vol. 47, 1916, pp. 103-126, by S. A. JOFFE, New York City. The

Eulerian number E_n is the coefficient of $x^{2n}/(2n)!$ in the development of $\sec x$ in a power series of x . The first twenty-seven Eulerian numbers were computed by Dr. GLAZIER, *Quarterly Journal*, Vol. 45. Mr. JOFFE has verified the calculations of Dr. GLAZIER for the first twenty-seven Eulerian numbers, and has added five more numbers of the series.

The Annual Register of the American Mathematical Society for the year 1916 shows a membership of 732; during the year the attendance at general and sectional meetings numbered 490; and 205 papers were presented. The treasurer's report shows a balance of \$10,198.38. The library contains 5,377 volumes.

School and Society has collected data showing that the universities of the United States granted 607 doctorates during the academic year 1915-1916. Of this number 332 degrees were granted in the sciences, 34 being in mathematics. The number receiving the doctorate in mathematics is not large, being only slightly more than 5 per cent. of the total, and is evidently not nearly sufficient to supply the demand for high-class instructors in the colleges and universities of America. If distributed geographically over the United States, but two doctors in mathematics could be supplied to every three states of the Union. The following table taken from the *Bulletin* of the American Mathematical Society shows the fourteen institutions granting the doctorates in mathematics with the names of those receiving the degree. BRYN MAWR: Mary G. Haseman; CALIFORNIA: T. A. Pierce, A. R. Williams; CHICAGO: A. F. Carpenter, A. M. Harding, W. L. Hart, J. O. Hassler, A. Henderson, A. L. Nelson, S. W. Reaves, A. R. Schweitzer, Pauline Sperry, Mary E. Wells, C. H. Yeaton; CLARK: P. Leyzerah; COLUMBIA: P. H. Linehan, F. J. McMackin; CORNELL: L. C. Cox, J. V. DePorte; HARVARD: P. M. Batchelder, R. W. Brink, A. L. Miller, N. Miller; JOHNS HOPKINS: F. D. Murnaghan, J. R. Musselman, C. H. Rawlins; MICHIGAN: W. Van N. Garretson; PENNSYLVANIA: J. R. Kline, J. H. Weaver; PRINCETON: J. W. Alexander, R. E. Gilman; VIRGINIA: E. S. Smith; WISCONSIN: T. M. Simpson; YALE: G. H. Light.

The following appointments and promotions have been announced: Dr. D. F. BARROW, of the University of Georgia, has been appointed instructor in mathematics in the Sheffield Scientific School; Dr. A. L. MILLER and Mr. R. B. BARNARD have been appointed instructors in mathematics at the University of Michigan; Dr. E. T. BELL has been promoted to an assistant professorship of mathematics at the University of Washington; Mr. C. W. WESTER has been appointed assistant professor of mathematics at the Iowa State Teachers College; Dr. P. H. LINEHAN has been promoted to an assistant professorship of mathematics at the College of the City of New York; Assistant Professor J. F. REILLY has been promoted to an associate professorship of mathematics at the University of Iowa; Dr. R. E. ROOT has been promoted to a professorship of mechanics and engineering mathematics at the U. S. Naval Academy; Assistant Professor T. FORT, of the University of Michigan, has accepted the professorship of mathematics and head of the department at the University of Alabama.

SUMMER SESSIONS.

In the March and April issues of the MONTHLY it is proposed to give a synopsis of graduate and undergraduate courses in mathematics offered by various universities and colleges during the coming summer. The importance of providing serious summer work, continuing from six to twelve weeks, is being recognized by a very large number of institutions. In so far as known to the writer, the first summer session of any university in this country was organized in 1890; since that date a large number of the institutions have taken on this broader field of usefulness, and many are providing summer curricula as complete as those offered during the traditional college year. Below are enumerated the mathematics courses so far as announcements reached the MONTHLY in time for this issue:

CORNELL UNIVERSITY. Summer session, July 9–Aug. 17. By Professor V. SNYDER: Foundations of elementary mathematics, five hours; Solutions by ruler and compass, five hours.—By Professor C. F. CRAIG: Advanced calculus, six hours.—By Professor F. W. OWENS: Projective geometry, six hours. Courses in algebra, trigonometry, analytic geometry and elementary calculus will be given.

THE UNIVERSITY OF COLORADO. Summer session, June 25–Aug. 4. By Professor A. COHEN (Johns Hopkins University): Differential Equations; Introductory course in analysis.—By Professor B. F. FINKEL (Drury College): The teaching of mathematics; Fundamental concepts of mathematics; Least squares; Fourier's series.—By Dr. G. H. LIGHT: Algebra; Trigonometry; Differential equations; Differential geometry.—Instructors have not yet been provided for courses in theory of equations, definite integrals, and theory of functions of a complex variable.

INDIANA UNIVERSITY. Summer session, June 14–August 10. By Professor S. C. DAVISSON: Theory of surfaces, five hours; Advanced calculus, five hours; Teaching of mathematics, two hours.—By Professor D. A. ROTHROCK: Calculus of variations, five hours; Solid analytic geometry, three hours.—By Professor U. S. HANNA: Differential equations, ten hours; Theory of functions, five hours. Courses in algebra, trigonometry, analytic geometry and elementary calculus are also offered.

UNIVERSITY OF MICHIGAN. Summer session, July 2–Aug. 24. By Professor W. W. BEMAN: Differential equations; Teachers' course in algebra and geometry.—By Professor J. L. MARKLEY: Functions of a complex variable; Advanced algebra.—By Professor W. B. FORD: Advanced calculus; Theory of potential.—By Professor L. C. KARPINSKI: History of mathematics.—By Professor J. W. BRADSHAW: Advanced analytics; Projective geometry.—By Dr. H. C. CARVER: Mathematical theory of finance, insurance and statistics. Courses are offered in elementary and college algebra, trigonometry, analytic geometry, and elementary calculus. Courses in modern physical and practical astronomy are offered by Professors HUSSEY, CURTISS and Dr. KIESS, of the department of astronomy.

UNIVERSITY OF KANSAS: Summer session, first term, June 7–July 18. By Professor U. G. MITCHELL: Higher algebra, three hours; Teachers' course, three hours.—By Professor E. B. STOFFER: Differential equations, three hours; Differential calculus, three hours; Analytics of the line and circle, two hours.—By Professor H. E. JORDAN: Mathematical analysis, five hours. Second term, July 19–Aug. 15. By Professor J. N. VAN DER VRIES: Mathematical theory of investment, two hours. Courses are also announced in solid geometry, algebra and trigonometry.

THE UNIVERSITY OF CHICAGO. Summer terms, June 18–July 25 and July 26–Aug. 31. The courses offered by Professor MOORE continue during the first term, all others continue until Aug. 31. All advanced courses are given four hours per week. By Professor E. H. MOORE: The spectrum of limited infinite hermitian matrix; Series.—By Professor H. E. SLAUGHT: Differential equations.—By Professor E. J. WILCZYNSKI: Projective differential geometry.—By Professor J. W. A. YOUNG: Solid analytics.—By Professor A. C. LUNN: Relativity; Functions of a complex variable.—By Professor D. N. LEHMER (University of California): Synthetic projective geometry.—By Professor G. D. BIRKHOFF (Harvard University): Ordinary differential equations of the second order. Elementary courses are also offered in college algebra, trigonometry, analytic geometry and differential and integral calculus, and courses in the teaching of mathematics.

NORTHWESTERN UNIVERSITY. Summer session, June 25–Aug. 4. By Professor E. J. MOULTON: Teachers' course; College algebra.—By Dr. C. E. WILDER: Trigonometry; Analytic geometry; Differential calculus.

KANSAS STATE AGRICULTURAL COLLEGE. Summer session, June 23–Aug. 3. By Professor W. H. ANDREWS: Teachers' course; Integral calculus; Trigonometry.—By Professor A. E. WHITE: Differential calculus; Analytic geometry; Solid geometry. Courses are also offered in elementary algebra and plane geometry.

SYRACUSE UNIVERSITY. Summer session, July 8–Aug. 16. By Professor W. H. METZLER: Teachers' course; Solid analytic geometry.—By Professor W. G. BULLARD: Advanced algebra; Modern algebra; Solid geometry.—By Professor F. F. DECKER: Teachers' course in algebra and geometry. Courses are announced in elementary algebra and geometry, trigonometry, analytic geometry, calculus, descriptive geometry, and mechanics.

UNIVERSITY OF TEXAS. First term, June 13–July 25. By Professor M. B. PORTER: Subject matter and teaching of high school mathematics, five hours.—By Professor C. D. RICE and Dr. GOLDIE HORTON: Calculus, 15 hours.—By Professor E. L. DODD: Advanced calculus, 10 hours.—By Professor E. P. R. DUVAL: Differential equations, 5 hours. Courses in solid geometry, college algebra, trigonometry and analytic geometry are also announced. Second term, July 26–Sept. 4. By Dean H. Y. BENEDICT and Mr. H. J. ETTLINGER: 5 hours advanced work and elementary courses.

NOTES ON THE ASSOCIATION.

Arrangements are in progress for the second summer meeting of the Association to be held in Cleveland, Ohio, September 6 and 7. The summer meeting of the Society will immediately precede that of the Association. A joint Committee of Arrangements has been appointed consisting of Professors F. N. Cole, W. D. Cairns, E. V. Huntington, T. M. Focke, A. D. Pitcher, and D. T. Wilson. The Program Committee for the Association consists of Professors C. S. Slichter, L. S. Hulburt, and E. J. Wilczynski.

The only part of the program thus far determined is the retiring address of past President Hedrick, in accordance with the action of the Council in New York, that each retiring president shall give an address at the next following summer meeting of the Association. Suggestions as to the program will be welcomed by the committee, and these may be sent to the chairman, Professor C. S. Slichter, University of Wisconsin, Madison, Wis.

In response to numerous questions, it will doubtless be of general interest to give some data with reference to the distribution of the votes for the officers of the Association at the last annual meeting. There were 405 votes cast, but of these 28 were unsigned, so that the location of 377 voters is definitely known. It is thought that probably most of the unsigned ballots were cast by those who voted in person at New York, but this gives no clue to the location of these voters, except that doubtless a number of them should be credited to New York, thus raising the percentage of this state as listed below.

Of the states having a membership of 40 or more, the percentages of those voting are as follows: Illinois 45%, Massachusetts 41%, Ohio 41%, California 36%, New York 34%, Missouri 33%, Pennsylvania 31%.

Of the states having a membership between 20 and 40, the percentage of those voting are as follows: Colorado 80%, Kansas 50%, Michigan 40%, Indiana 90%, New Jersey 28%, Texas 25%, Maryland 23%, Iowa 22%, Wisconsin 21%.

Of the states having a membership between 10 and 20, the percentages of those voting are as follows: Maine 43%, Virginia 41%, North Carolina 36%, Rhode Island 36%, New Hampshire 33%, Minnesota 31%, Nebraska 31%, Alabama 30%, District of Columbia 29%, Washington 21%, Georgia 21%, Canada 20%, Connecticut 16%, South Dakota 10%.

Of the states having a membership less than 10 the percentages of those voting are as follows: North Dakota 100% (one member), Utah 75%, New Mexico 66%, Arizona 50%, South Carolina 50%, Idaho 50%, Oklahoma 37%, Wyoming 33%, Arkansas, Delaware, Florida, Vermont and West Virginia each 25%, Kentucky 16%, Oregon 14%, Louisiana, Mississippi, Montana, Nevada, and Tennessee each 0%.

These figures show that the voters (and hence also the non-voters) were quite evenly distributed throughout the country. Reference to the charter

membership list will show from these percentages the actual number of voters in each state. The percentage figures, when not exact, are given to the nearest integer.

The distribution of ballots for the presidential candidates is of special interest since the result was so close. These figures show, in general, a very even distribution as between the two candidates. For instance, the presidential votes were equally (or very nearly equally) divided in the following states: Illinois, Massachusetts, Minnesota, Ohio, Pennsylvania, and New Jersey. In some states there was a clear preponderance in favor of Huntington, as in New York and Michigan, while in others there was a like preponderance for Cajori, as in California, Colorado and Missouri, but it would be difficult to discover any general geographical cleavage.

It seems probable that the full significance of the franchise was not generally understood and that the next election will bring out a much larger vote. It is hoped that the above analysis of the figures may contribute toward this end.

Applications for membership in the Association are steadily coming in. The following fourteen, received since the New York meeting, were acted on by the Council by mail vote on February 10, 1917. Ten other applications are now in hand (March 10, 1917).

R. J. ALEY, President, University of Maine, Orono, Me.

J. N. BROADLICK, Teacher, High School, Pittsburg, Kan.

J. W. CAMPBELL, Lecturer in Mathematics, Wesley College, Winnipeg, Can.

W. E. ETZEL, Professor of College Mathematics, College of St. Thomas, St. Paul, Minn.

P. E. KRETZMANN, Professor of Mathematics and Science, Concordia (Junior) College, St. Paul, Minn.

CLARENCE McCORMICK, Instructor in Mathematics, University of Minnesota, Minneapolis, Minn.

SISTER MARY MAGNA, Head of the Science Department, St. Benedict's College, St. Joseph, Minn.

R. H. MARSHALL, Assistant Professor of Mathematics, State Normal Manual Training School, Pittsburg Kan.

FLORA PORTER, Teacher, Nashville, Tenn.

L. W. REID, Professor of Mathematics, Haverford College, Haverford, Pa.

EVAN THOMAS, Professor of Mechanics and Mathematics, University of Vermont, Burlington, Vt.

WILLIS WHITED, Engineer of Bridges, Pennsylvania State Highway Department, Harrisburg, Pa.

T. C. WOLLAN, Professor of Mathematics, Park Region Luther College, Fergus Falls, Minn.

HAVERFORD COLLEGE, Haverford, Pa., to institutional membership.

COMMUNICATIONS.

I. *To the Editors of the MONTHLY:*

Professor J. W. Young—as chairman of the National Committee on Mathematical Requirements—has requested Professor D. E. Smith and myself to coöperate in the preparation of a report on the criticisms of mathematics, making a critical examination of the grounds of the more prominent and more responsible attacks on mathematics, with a view to determining the criticisms which are clearly not valid, those which are clearly justifiable, and those concerning the validity of which there is reasonable doubt, with a view in the latter case to resolving the doubt if possible.

We desire, with your permission, to bring this matter to the attention of readers of the *AMERICAN MATHEMATICAL MONTHLY*, with the hope that they may assist us by bringing to our attention all possible material of value, particularly such as might otherwise escape attention. Communications on the subject may be addressed either to D. E. Smith, Teachers College, Columbia University, or to H. W. Tyler, Massachusetts Institute of Technology, Cambridge

H. W. TYLER.

II. *To the Editors of the MONTHLY:*

In the February issue of the *MONTHLY* you remark (page 73) concerning “A problem in probability” by C. S. Jackson that “The proof sheets of this article never reached us from the author, having probably been lost in ocean transit.” That Mr. Jackson died very suddenly on October 18, 1916, does not seem to have been earlier remarked in this country. An appeal (which has been recently circulated) on behalf of the widow and nine children left by the deceased in very straitened circumstances contains the following sentence: “So passed away one who was universally respected and esteemed, and who was held in great regard by all who knew him, both for his refined and gentle character and high intellectual attainments.” The appeal is signed by officers in the Royal Military Academy at Woolwich where Mr. Jackson was mathematical master for more than a quarter of a century.

Charles Samuel Jackson took his B.A. at Cambridge, in 1889 and his M.A. in 1896. In 1894 he became a barrister at Lincoln’s Inn. He was the author of a dozen short articles in *Revista de la Sociedad Española*, *Messenger of Mathematics* and *Mathematical Gazette*, and of the pamphlet entitled “The Calculus as a school subject” in a volume prepared for the International Commission on the Teaching of Mathematics. He was also joint author of five books: 1, with R. M. Milne, “A first statics” (1903); 2, with W. M. Roberts, “A first dynamics” (1909); 3, with H. C. Dunlop, “Slide rule notes” (1913); 4, with W. M. Roberts, “A book of elementary mechanics” (1914); 5, with F. J. W. Whipple and L. Roberts, “A twentieth century arithmetic” (1915).

Professor Jackson was a charter member of the Association.

R. C. ARCHIBALD.